

# GRANT & HACKH'S CHEMICAL DICTIONARY

[American, International, European and British Usage]

*Containing the Words Generally Used in Chemistry,  
and Many of the Terms Used in the Related  
Sciences of Physics, Medicine, Engineering,  
Biology, Pharmacy, Astrophysics,  
Agriculture, Mineralogy, etc.*

*Based on Recent Scientific Literature*

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compound containing the  $-HSO_4$  radical derived from sulfuric a. a. value (1) Acidity expressed in terms of normality. (2) A. number.

**acidation** (1) Acidylation. Conversion into an acid. (2) Acidification; making a solution acidic.

**acidify** To add an acid to a solution until the pH value falls below 7.0.

**acidimetry** The titration of an acid with a standard alkali solution. See *quantitative analysis*.

**acidity** (1) Sourness. See *taste*. (2) An excess of hydrogen ions in aqueous solution; measured by (a) the intensity or degree of acidity, expressed as pH value, q.v.; (b) the amount of acidity, expressed as normality, q.v. Antonym: alkalinity. (3) The power of a base to unite with one or more equivalents of an acid. Antonym: basicity. amount of ~ The normality or percentage of an acid as determined by titration (effective acid). degree of ~ The strength of an acid expressed by its hydrogen ion concentration. Cf. *pH*.

**acidium\*** Indicating a cation formed by adding protons to the acid of the anion; as,  $H_2NO_3^+$ , the nitrate acidium ion.

**acidosis** A metabolic state in which the acidity of the body fluids (e.g., blood) is above the normal level.

**acids** See Tables 3 and 4 on pp. 11-13.

**acidulate** Acidify.

**acidulation** Acidation (2).

**acidum** Latin for acid. a. aceticum Acetic acid. a. benzocum Benzoic acid; etc.

**acyclination** Acylation. The process of introducing an acid radical into an organic compound, e.g., acetylation (acetyl radical).

**aci-al** An aluminum alloy containing Cu 3-6, Fe 0.1-1.4, Mn 0-1.5, Mg 0.5-0.9, Si 0-0.4%. Cf. *aerometal*.

**aci-nitro compound\*** Isonitro c. A colored isomer of a nitro compound containing the  $OH(O_2)N=$  group.

**acivinyl alcohols** Unsaturated ketols.

**Ackermann automatic reckoner** A device to determine the dry substance of milk from its specific gravity and fat content.

**Acker process** The manufacture of sodium hydroxide by electrolysis of molten salt using molten lead as cathode.

**acme burner** A bunsen burner with regulators for gas and air, constructed so that the flame cannot strike back.

**acmite**  $NaFeSi_2O_6$ . Aegirite. A rock-forming monoclinic pyroxene, d.3.53, hardness 6-6.5, mol. vol. 65.5; occurs as a brownish, greenish, or black *silica* mineral, q.v., in Norway, and in boiler scales.

**acocantherin** A crystalline glucoside from *Acocanthera abyssinica*. The active principle of the shashi arrow poison of eastern Africa, related to ouabain.

**acolytine** Lyaconine. An alkaloid of *Aconitum*.

**aconic acid**  $C_5H_4O_4$  = 128.1. Formylsuccinic acid lactone, 4,5-dihydro-5-oxo-3-furancarboxylic acid†. Colorless, triclinic crystals, m.164, sparingly soluble in water.

**aconine**  $C_{25}H_{41}O_9N$  = 499.6. An amorphous alkaloid from the root of aconite. acetylbenzoyl ~ Aconitine. pseudo ~ Pseudoaconitine.

**aconitase** A. hydratase\*. An enzyme which catalyzes the conversion of a citrate into a cis-aconitate.

**aconite** *Aconitum*, monkshood, wolf's bane, blue rocket, friar's cowl, *Aconitum napellus* (*Ranunculaceae*). a. alkaloids Alkaloids from *Aconitum* species, e.g.:

Aconine .....	$C_{25}H_{41}O_9N$
Indaconine .....	$C_{27}H_{47}O_9N$
Pyraconitine .....	$C_{32}H_{41}O_9N$
Aconitine .....	$C_{34}H_{47}O_{11}N$
Japaconitine:.....	$C_{34}H_{49}O_{11}N$
Indaconitine .....	$C_{34}H_{47}O_{10}N$
Pseudoaconitine .....	$C_{36}H_{51}O_{12}N$

a. leaves The dried leaves of *A. napellus*, used similarly to a. root.

**aconitic acid** 1,2,3-Propenetricarboxylic acid\*.

**aconitine**  $C_{34}H_{47}O_{11}N$  = 645.7. Acetylbenzoylaconine. An extremely poisonous alkaloid from the root of *Aconitum napellus*. Colorless prisms, or amorphous powder, m.195, slightly soluble in water; a circulatory sedative. Cf. *aconite* alkaloids. pseudo ~ Pseudoaconitine.

a. arsenate Colorless crystals, soluble in water. a. phosphate  $C_{34}H_{47}O_{11}N \cdot H_3PO_4$  = 743.7. White crystals, soluble in water. a. salicylate  $C_{34}H_{47}O_{11}N \cdot C_7H_6O_3$  = 783.9. White crystals, soluble in water. a. sulfate  $(C_{34}H_{47}O_{11}N)_2 \cdot H_2SO_4$  = 1389.6. Colorless (-)-rotatory crystals, soluble in water.

**Aconitum** A genus of poisonous plants of the Ranunculaceae family. See *aconite*.

**acoretin** A neutral resin obtained by the oxidation of the aqueous extract of sweet flagroot, *Acorus calamus*.

**acorin**  $C_{36}H_{60}O_6$  = 588.9. A glucoside from calamus; the rhizome of *Acorus calamus*, sweet flag (Araceae); used in perfumery.

**acorn** The fruit of the oak *Quercus robur*; an astringent. a. flour Racahout. a. sugar Quercitol.

**acoustics** The study of sound and its effects.

**acovenoside A** Venenatin. A cardiac glycoside from the bark and wood of *Acokanthera venenata*, G. Don. Crystalline plates, m.222.

**ACP** Calcium hydrogenphosphate for use in foods, e.g., baking powders.

**acqua** Italian for "water."

**acquired immunity** The resistance of an organism resulting from an attack by an infectious disease. Also artificially produced by treatment with a vaccine or serum.

**acraldehyde** Acrylaldehyde\*.

**acre** A surface measure: 1 acre = 0.4047 hectare = 4 rods = 160 poles = 1/640 sq mile.

**Acree-Rosenheim reaction** A reaction used to test for protein. A test solution plus dilute formaldehyde is layered on concentrated sulfuric acid; a purple ring indicates proteins.

**acrid** Pungent, bitter, burning, or irritating; as some burning plastics.

**acridic acid**  $C_9H_5N(COOH)_2$  = 217.2. Acridinic acid, 2,3-quinolinedicarboxylic acid. Colorless crystals, decomp. 130; an oxidation product of acridine.

**acridine\***  $(C_6H_5)_2N \cdot CH$  = 179.2. A tricyclic, heterocyclic hydrocarbon obtained from coal tar. Colorless leaflets, m.109, soluble in water. Used in the synthesis of dyes and drugs. Cf. *chrysanthine*. diamino ~ chloride Acriflavine.

**diaminodimethyl ~** A yellow dyestuff. diamino ~ sulfate Proflavine.

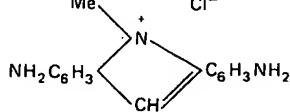
a. dye para ~ Derivatives of a. (relative to the methine carbon) as, acriflavine, characterized by fluorescent solutions.

**acridinic acid** Acridic acid.

**acridinyl\*** The radical  $C_{13}H_8N-$ , from acridine.

**acridone\***  $(C_6H_5)_2NH \cdot CO$  = 195.2. Colorless crystals, m.354, insoluble in water.

**acriflavine**  $C_{14}H_{14}N_3Cl$  = 259.7. 4,8-Diamino-1-methylacridine chloride, trypaflavine,



Brown crystals, soluble in water (fluorescent solution); an antiseptic and disinfectant. a. hydrochloride A more soluble

**actinometry** The measurement of light intensity.

**actinomycetin** An antibiotic substance from cultures of *Streptomyces albus*.

**actinomycin D** Dactinomycin.

**actinon** Early name for radon-219.

**actinouranium** Early name for uranium-235. a. series See *radioactive elements*.

**actinozoa** The phylum Coelenterata, or jellyfish, which have starlike structures.

**action** The physical concept of activity. chemical ~ A reaction in which the atoms of a molecule or molecules are rearranged. electronic ~ The change of an electron from one to another energy level. Cf. *excitation*. physical ~ A transformation of matter which does not affect molecular structure.

**activated** Rendered active, reactive, or excited. a. atom See *excited atom*. a. carbon Charcoal produced by the destructive distillation of vegetable matter, e.g., nutshells, with or without the addition of chemicals. Used in powdered form to decolorize sugar solutions, oils, etc., or in granular form as an adsorbent in gas masks and for the recovery of solvent vapors; used in treatment of poisoning, particularly by drugs, when either it is given by mouth or blood is perfused through it (USP, EP, BP). Cf. *Norit, revivification*. a.

**molecule** A molecule with one or more excited atoms. Cf. *irradiation, excitation*. a. sludge The oxidized and flocculent sediment of sewage which contains bacteria. a. s. process Sewage is agitated in contact with air, thereby causing oxidation and flocculation by bacterial action; it is left to settle in separation tanks and yields an essentially harmless effluent.

**activation** (1) A method by which a metallic catalyst is rendered active or is regenerated, e.g., heating platinum sponge. Cf. *revivification*. (2) The transformation of an inactive enzyme into an active enzyme by the creation of a transient substrate-enzyme complex. Cf. *kinase*. (3) Excitation. (4) Irradiation. (5) A. of carbon, e.g., by heating with steam, or sulfuric acid. energy of ~  $E_a$ . The energy required to initiate a reaction or process; sometimes greater than that required to sustain it. Derived from the Arrhenius equation,  $E_a = RT^2(\delta \ln k / \delta T)_p$ . It is thus related to the dependence of the rate constant on temperature at constant pressure.

**activator** (1) A catalyst. (2) A substance used in flotation to produce a coating having metallic properties, as, sodium sulfide for lead carbonate ores. (3) In electronics, describing a component, such as a transistor, that produces gain. Cf. *passive*.

**activatory** See *phase*.

**active** (1) Dynamic or working, as opposed to static or inert, as in metabolism. (2) Having optical properties, as an asymmetric carbon atom. Cf. *optical activity*. surface- ~ See *surfactant*.

a. center That part of an enzyme molecule which forms an activated complex with the substrate. a. deposit The formation of a radioactive layer on a substance exposed to radioelements. a. immunity The stimulation of an organism to produce antibodies against infection by microorganisms. a. immunization The processes by which the protective agencies of an organism are made resistant to bacterial invasion. a. mass Amount-of-substance concentration. a. oxygen test A test for rancidity in fats, by the liberation of iodine from potassium iodide in acetic acid. a. principle The substance responsible for the physiological action of a drug, e.g., an alkaloid.

**activity** (1) The rate in watts at which work is performed. (2)

The ratio of the escaping tendency (*fugacity*) of two phases at the same temperature. A correction applied to the concentration of a strong electrolyte to satisfy *Ostwald's dilution law*, q.v. (3) A measure of interionic forces. (4)\* The decay of a radionuclide. See *becquerel*.

**amyolytic** ~ Digestive power of amylase. excited ~ Active deposit.

**ionic** ~ Thermodynamic concentration. In a dilute solution which obeys the gas laws, the i. a. equals the concentration; in other solutions, the value which ensures that the gas laws hold. **optical** ~ The capacity of a substance to rotate the plane of polarized light. **peptic** ~ Digestive power of pepsin. **radio** ~ See *radioactivity*. **tryptic** ~ Digestive power of trypsin.

a. of activated carbon The percentage of carbon disulfide vapor absorbed by carbon (generally 50%).

**actomyosin** A combination of *actin* and *myosin*, q.v., which comprises the tractile muscle system.

**actor** A compound which takes part in both primary and secondary reactions. See *induced reaction*.

**acute** Quick, short, or sharp. Cf. *chronic*. a. poisoning See *poisoning*.

**acyclic\*** Describing organic compounds which contain no ring system, as, the alkanes. Synonym: Aliphatic (chains).

Antonym: cyclic, aromatic (rings).

**acyl**\* An organic radical derived from an organic acid by the removal of the hydroxyl group; e.g., R-C(O)- is the a. radical of R-CO-OH. See *acetyl, benzenesulfonyl, benzoyl*, etc. a.

**derivative** An organic compound containing an a. radical, e.g., amides, R-CO-NH<sub>2</sub>.

**acyclals\*** Generic term for compounds of the type R'CH(OCOR')<sub>2</sub>.

**acylamines** N-substituted primary and secondary amides. More specifically, monoacylamines and diacylamines, respectively.

**acylation** Acidylation.

**acylorns\***  $\alpha$ -Hydroxy ketones of the type R-CO-CHOH-R. Formed by condensation of aldehydes, as, Ph-CO-CHOH-Ph, benzoin.

**aczol** An ammoniacal solution of zinc and copper phenolates; a wood preservative.

**adamant** A hard mineral, as, diamond.

**adamantane** C<sub>10</sub>H<sub>16</sub> = 136.2. Diamantane. sym- ~ Tricyclodecane. White crystals, m.207 (subl.). Its derivatives are used to make plastics heat- and chemical-resistant.

**adamantine** Diamond. a. boron See *boron*. a. spar A dark gray, smoky variety of corundum from India; green in transmitted light.

**adamelloose** An igneous andesite-diorite rock containing hornblende, feldspar, quartz, chlorite, agneite, apatite, and rutile (Pigeon Point, Minn.).

**Adam galactometer** A graduated buret with two glass bulbs, used in milk analysis.

**adamite** Adamite.

**adamite** Zn<sub>2</sub>AsO<sub>3</sub>. Adamite. A native arsenate; yellow orthorhombic crystals (Chile, Greece).

**Adamkiewicz reaction** Protein solutions give a violet ring when layered on glacial acetic acid and concentrated sulfuric acid.

**adamsite** (1) A greenish-black mica. (2) Diphenylamine chlorarsine. *Adansonia*. *Adansonia digitata* (Bombacaceae), the baobab tree of Africa, yields edible boui or monkey bread. The bark is an emollient; the dried leaves, lalo, are an antipyretic.

**adansonine** An alkaloid from the bark and leaves of *Adansonia digitata*. Colorless white crystals; a febrifuge.